REMARKS

Claims 12-29 are pending in the application. Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,304,750 ("Rashid-Farrokhi") in view of Publication No. US 2002/0061056 ("Smolyar") and United States Patent No. 6,987,746 ("Song"). Claims 13 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rashid-Farrokhi in view of Smolyar and Song and further in view of Publication No. US 2002/0041637 ("Smart"). Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Rashid-Farrokhi in view of Smolyar and Song, further in view of Smart, and further in view of United States Patent No. 5,297,171 ("Koch"). Claims 19, 20, and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rashid-Farrokhi in view of Smolyar and Song and further in view of Publication No. US 2004/0190603 ("Dabak"). Claims 23, 26, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rashid-Farrokhi in view of Smolyar and Song, further in view of Dabak, and further in view of Koch. The examiner has objected to claims 15-17, 21, 24-25, 27, and 29 as being dependent upon a rejected base claim but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of their respective base claims and any intervening claims.

Applicants respectfully traverse the foregoing rejections and request reconsideration and withdrawal thereof. Two independent claims are pending in the application, namely, claims 12 and 19. Claim 12 recites:

> A diversity signal combiner system for a digital communications system, comprising:
>
> [a] a plurality of channels each for receiving a channel signal of a plurality of channel signals from a spatially diverse antenna array element;

> [b] a plurality of downconverters each on one of the plurality of channels for downconverting a corresponding channel signal to baseband;
>
> [c] a co-phasing software block for resolving phase differences among the plurality of channel signals after the plurality of channel signals are downconverted by the plurality of downconverters;
>
> [d] a combiner for combining the plurality of channel signals by weighting and delaying each of the plurality of channel signals after the co-phasing software block resolves the phase differences among the plurality of channel signals; and
>
> [e] a symbol synchronizer for determining symbol boundaries of the plurality of channel signals after the combiner combines the plurality of channel signals to enable a system signal to be accurately demodulated to accurately represent transmitted data.

(Emphasis added.) The examiner contends that Rashid-Farrokhi teaches limitations [a], [b], and [d], that Smolyar teaches limitation [c], that Song teaches limitation [e] and that one having ordinary skill in the art would have found it obvious to combine the teachings of these references to yield the claimed invention. More particularly, the examiner contends, with respect to limitation [c], that "the plurality of channel signals need to have phase alignment prior to combining is well known in the art, as is evident by Smolyar (page 1, paragraph [0006])" and, with respect to limitation [e], that "Song discloses a symbol synchronizer for determining symbol boundaries of the plurality of channel signals after the combiner combines the plurality of channel signals to enable a system signal to be accurately demodulated to accurately represent transmitted data (column 7, lines 38-42)." Applicants respectfully disagree.

With respect to limitation [c], Applicants submit that Smolyar does not teach phase alignment of plural channel signals to be well known in the art. Instead, Smolyar is directed to time alignment of rake fingers to channel multipath delay components using a receiver with a single RF channel, and it provides no disclosure of applying such technique to plural channels. With respect to limitation [e], Applicants submit that Song discloses a symbol synchronizer for

channels that are derived from different slots in a frame and that, therefore, the synchronizer of Song applies only to a single RF receiver channel. Such single channel symbol synchronization is substantially different from and not readily adaptable to a multiple RF receiver channel system, wherein symbol synchronization must be performed jointly among all of the receiver channels. As such, Song does not teach performing symbol synchronization for multiple RF receiver channels.

Based on the above, combining Song with Rashid-Farrokhi and Smolyar would not yield Applicants' invention as set forth in claim 12. Accordingly, Applicants respectfully request reconsideration and withdrawal of this ground for rejection and allowance of claim 12. Because claims 13-18 depend from claim 12, Applicants respectfully request allowance of these claims as well.

Claim 19 recites:

> A diversity signal combiner system for a digital communications system, comprising:
>
> [a] a plurality of channels each for receiving a signal from a spatially diverse antenna array element;
>
> [b] a plurality of downconverters each on one of the plurality of channels for downconverting a corresponding plurality of channel signals to baseband;
>
> [c] a plurality of matched filters each being located on one of the plurality of channels for filtering the corresponding plurality of channel signals with a match filtering function based on predetermined signal transfer function characteristics to average noise out of the corresponding plurality of channel signals to maximize a signal-to-noise ratio of each of the plurality of channel signals;
>
> [d] a combiner for combining each of the plurality of channel signals output from the plurality of matched filters by appropriately weighting and delaying each of the plurality of channel signals; and
>
> [e] a symbol synchronizer for determining symbol boundaries of the plurality of channel signals output from the plurality of matched filters as the combiner

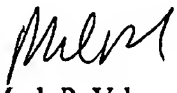
> weights and delays each of the plurality of channel signals, thereby causing a single combined signal with digital sampling to be output from the combiner.

(Emphasis added.) The examiner contends that Rashid-Farrokhi teaches limitations [a], [b], and [d], that Dabak teaches limitation [c], that Song teaches limitation [e], and that one having ordinary skill in the art would have found it obvious to combine the teachings of these references to yield the claimed invention. More particularly, the examiner contends, with respect to limitation [c], that "Dabak teach a plurality of matched filters each being located on one of the plurality of channels for filtering the corresponding plurality of channel signals with a matched filtering function based on predetermined signal transfer function characteristics to average noise out of the corresponding plurality of channel signals to maximize a signal-to-noise ratio of each of the plurality of channel signals (see matched filters in figure 7)." With respect to limitation [e], the examiner contends that "Song discloses a symbol synchronizer for determining symbol boundaries of the plurality of channel signals after the combiner combines the plurality of channel signals to enable a system signal to be accurately demodulated to accurately represent transmitted data (column 7, lines 38-42)." Applicants respectfully disagree.

With respect to limitation [c], Applicants submit that Dabak does not teach a system having a plurality of receiver channels and, therefore, cannot teach a plurality of matched filters, each being located on one of the receiver channels. Applicants' position with respect to limitation [e] is as set forth above in connection with claim 12.

Based on the above, combining Rashid-Farrokhi, Smolyar, Song and Dabak would not yield Applicants' invention as set forth in claim 19. Accordingly, Applicants respectfully request reconsideration and withdrawal of this ground for rejection and allowance of claim 19. Because claims 20-29 depend from claim 19, Applicants respectfully request allowance of these claims as well.

Respectfully submitted,



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